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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,655	04/16/2004	Ramon A. Gomez	1875.5200000	8481
26111 7590 07/10/2007 STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C. 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005				
			EXAMINER NGUYEN, SIMON	
			ART UNIT 2618	PAPER NUMBER
			MAIL DATE 07/10/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/825,655

Applicant(s)

GOMEZ ET AL.

Examiner

SIMON D. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4-11,13-17 and 20-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-11, 13-17, 20-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 4, 10, 13, 17, 20, 23-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (20040214547).

Regarding claim 1, 10, 17, 20, 23, Kim discloses a mixer, comprising: an input transistor pair for receiving a RF signal (RF1, RF2) and a LO signal (LO); a plurality of submixers coupled to each other in parallel, and a tail current source for supply power (fig. 4-6, paragraphs 83), wherein each submixer having a polarity in order to generate an output (IF1, IF2) (abstract) (it should be noted that the IF1, IF2 are generated by mixing a plurality of mixers, which means the each mixer having the polarity to prevent cancellation of the signal output) wherein the LO signal is divided into a plurality of individual LO waveforms, and a phase difference between any two time-adjacent individual LO waveforms is approximately equal to a phase difference between any other two time-adjacent individual LO waveforms (figs. 5, paragraphs 29, 31, 56-59).

Regarding claims 4, 13, 20, 24, Kim further discloses the phase difference is 45 degrees (fig.5).

3. Claim 1, 5-11, 14-15, 17, 21-23, 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Molnar et al. (2003/0176177).

Regarding claims 1, Molnar discloses a mixer (figs.13, 24), comprising: an input transistor pair for receiving a baseband signal (RF+-) and a LO signal (PLO +,-) ; a plurality of submixers ( fig.13) coupled in parallel for mixing the baseband signal and the LO signal; and a tail current source (I current) to supply power; wherein the plurality of submixers share the input transistor pair and the tail current source (fig.13), wherein each submixer having a polarity that can be reversed to obtain a combining output (Molnar discloses the reversed polarity of mixer in order to obtain a combining output, which is inherently to avoid the cancellation of the combining signal output) (paragraphs 26, 34, 44, 93, 99, 130, 247, 258, 263-264, figs. 13, 16), wherein Molnar further discloses a phase difference between any two time-adjacent individual LO waveforms is approximately equal to a phase difference between any other two time-adjacent individual LO waveforms in the plurality of LO waveforms (figs. 6, 14A, 19A-B, paragraphs 130, 185-195).

Regarding claim 10, Molnar discloses a RF mixer, comprising: inputting an input signal (RF in) to a plurality of sub-mixers, each submixer having a polarity that prevent cancellation of signals output (fig.13, paragraphs 26, 34, 44, 93, 99, 130, 247, 258, 263-264); driving a switch on each submixer; mixing the input signal with the plurality of

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individual LO signal (LO+-) such that only one of the plurality of mixers is active at a time (figs. 6, 19A-B, paragraphs 27, 33), wherein a phase difference between any two time-adjacent waveforms is equal to a phase difference between any other two-adjacent waveforms (figs 6, 19A-B, paragraphs 170-181); mixing the input signal with the plurality of LO waveforms (fig.13) ; summing outputs of each of the plurality of sub-mixers to generate a final output signal (paragraphs 194-195, 279, 204, figs.13, 24).

Regarding claims 17, 23, these claims are rejected for the same reason as set forth in claim 1.

Regarding claims 5, 11, 21, 25, Molnar further discloses delay times of LO waveforms preventing the overlapping of the LO waveforms (figs. 19a-b, paragraphs 77, 43, 130, 131, 232, 247).

Regarding claims 6-7, 26, Molnar discloses six mixers, wherein the output signal is scaled by  $\sqrt{2}/2$  (fig. 16, paragraphs 260, 263)..

Regarding claims 8, 14, Molnar discloses a square wave, when summed, create a linear signal (figs. 11, 14A, 18A-D, 20 A-B).

Regarding claims 9, 22, Molnar discloses only one submixer is active at a time (figs. 6, 19A-B, paragraphs 27, 33).

Regarding claim 15, Molnar further discloses the input signal is an RF signal and the output signal is an IF signal (paragraphs 5-7).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar et al. (2003/0176177).

Regarding claim 17, Molnar fails to teach the input signal is an IF signal and the output signal is an RF signal.

It should be noted that since Molnar discloses the mixer used in a mobile communication device (paragraphs 18, 88), which includes a receiver and a transmitter. Therefore, the mixer as taught by Molnar can be applied in the transmitter, as known to those skilled in the art, the transmitter inherently comprises an IF signal as an input signal mixed with a LO signal to generate an RF signal as an output signal in order to transmitting the RF signal.

6. Claims 4, 13, 20, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar et al. (2003/0176177) and further in view of Kim et al. (2004/0214547).

Regarding claim 4, 13, 20, 24, Molnar fails to disclose the phase difference is 45 degrees.

Kim discloses the same field of invention, in which the phase difference is 45 degrees (fig.5, paragraphs 29, 31). Therefore, it would have been obvious to one skilled

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in the art at the time the invention was made to have Molnar, modified by Kim in order to significantly remove a secondary intermodulation distortion which is to improve linearity.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Simon Nguyen whose telephone number is (571) 272-7894. The examiner can normally be reached on Monday-Friday from 7:00 AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban, can be reached on (571) 272-7899.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

600 Dulany, Alexandria, VA 22314

Or faxed to:

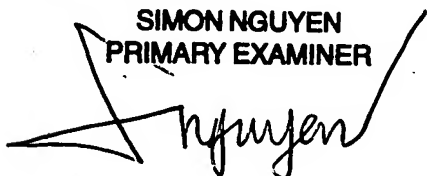
(571) 273-8300 (for formal communications intended for entry)

Hand-delivered response should be brought to Customer Service Window located at the Randolph Building, 401 Dulany, Alexandria, VA, 22314.

Simon Nguyen

June 26, 2007

**SIMON NGUYEN  
PRIMARY EXAMINER**

A handwritten signature in black ink, appearing to read 'S. Nguyen', is written over the printed name and title.